# DM54253/DM74253 TRI-STATE® Dual 1 of 4 Line Data Selectors/Multiplexers

#### **General Description**

This device is a TRI-STATE version of the very popular DM54153 (DM7214) data selectors/multiplexers. It contains full on-chip decoding to select the desired data input. The DM54/74253 is a dual, four-line multiplexer that has common select lines which therefore select the same input line of both multiplexers. However, the two outputs can be individually controlled by means of the separate enable lines; which, when taken to a high logic level, places the output in the high-impedance TRI-STATE condition. The data at the output of the DM54/74253 is true.

#### **Features**

■ TRI-STATE pin equivalents to popular 54/74 TTL devices DM7214/8214 --- 54153/74153

- Typical propagation delay 13.5 ns
- Typical power dissipation 170 mW
- Strobe/enable override

## Absolute Maximum Ratings (Note 1)

Supply Voltage Input Voltage

7V 5.5V

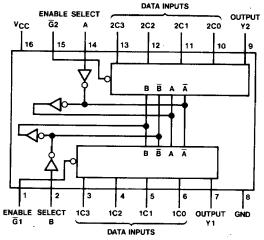
Storage Temperature Range

-65°C to 150°C

Note 1: The "Absolute Maximum Ratings" are those values beyond which the safety of the device can not be guaranteed. The device should not be operated at these limits. The parametric values defined in the "Electrical Characteristics" table are not guaranteed at the absolute maximum ratings. The "Recommended Operating Conditions" table will define the conditions for actual device operation.

## **Connection Diagrams**

#### Dual-In-Line Package



TL/F/6568-1

54S253 (J)

74S253 (N)

# **Recommended Operating Conditions**

Symbol	Parameter	DM54253			DM74253			
		Min	Nom	Max	Min	Nom	Max	Units
V <sub>CC</sub>	Supply Voltage	4.5	5	5.5	4.75	5	5.25	· V
V <sub>IH</sub>	High Level Input Voltage	2			2			V
VIL	Low Level Input Voltage			0.8			0.8	٧
Гон	High Level Output Current			- 2			- 5.2	mA
loL	Low Level Output Current			16			16	mA
T <sub>A</sub>	Free Air Operating Temperature	- 55		125	0	÷	70	°C

# Electrical Characteristics over recommended operating free air temperature (unless otherwise noted)

Symbol	Parameter	Condition	Min	Typ (Note 1)	Max	Units	
$v_i$	Input Clamp Voltage	$V_{CC} = Min, I_1 = -$			- 1.5	٧	
V <sub>OH</sub>	High Level Output Voltage	V <sub>CC</sub> = Min, I <sub>OH</sub> = V <sub>IL</sub> = Max, , V <sub>IH</sub>	2.4			٧	
V <sub>OL</sub>	Low Level Output Voltage	V <sub>CC</sub> = Min, I <sub>OL</sub> = V <sub>IH</sub> = Min, , V <sub>IL</sub> =			0.4	٧	
11	Input Current@Max Input Voltage	V <sub>CC</sub> = Max, V <sub>I</sub> =	5.5V			1	mA
Чн	High Level Input Current	V <sub>CC</sub> = Max, V <sub>I</sub> =	2.4V			40	μΑ
hը.	Low Level Input Current	V <sub>CC</sub> = Max, V <sub>I</sub> =	0.4V			- 1.6	mA
lozh	Off-State Output Current with High Level Output Voltage Applied	V <sub>CC</sub> = Max, V <sub>O</sub> = V <sub>IH</sub> = Min, V <sub>IL</sub> =			40	μΑ	
lozL	Off-State Output Current with Low Level Output Voltage Applied	V <sub>CC</sub> = Max, V <sub>O</sub> = V <sub>IH</sub> = Min, V <sub>IL</sub> = I				- 40	μΑ
los	Short Circuit	V <sub>CC</sub> = Max	DM54	- 18	<del>                                     </del>	- 55	mA
	Output Current	(Note 2)	DM74	- 18	·	- 55	
lcc	Supply Current	V <sub>CC</sub> = Max	,		34	56	mA
		(Note 3)	DM74		34	65	

Note 1: All typicals are at  $V_{CC} = 5V$ ,  $T_A = 25$ °C.

Note 2: Not more than one output should be shorted at a time.

Note 3:  $I_{\mbox{CC}}$  is measured with all inputs grounded and outputs open.

# Switching Characteristics at V<sub>CC</sub> = 5V and T<sub>A</sub> = 25°C (See Section 1 for Test Waveforms and Output Load)

	From	$R_L = 400\Omega$						
Parameter	(Input) To (Output)	C <sub>L</sub> = 5 pF			C <sub>L</sub> = 50 pF			Units
		Min	Тур	Max	Min	Тур	Max	
t <sub>PLH</sub> Propagation Delay	Data	,				15	23	ns
Time Low to High	to							
Level Output	Output	<b> </b>						
t <sub>PHL</sub> Propagation Delay	Data					12	18	ns
Time High to Low	to							
Level Output	Output							
t <sub>PLH</sub> Propagation Delay	Select					20	34	ns
Time Low to High	to			1				
Level Output	Output							
t <sub>PHL</sub> Propagation Delay	Select					20	34	ns
Time High to Low	to							
Level Output	Output							
t <sub>PZH</sub> Output Enable	Enable					12	18	ns
Time to High	to							
Level Output	Q							
t <sub>PZL</sub> Output Enable	Enable	1				14	21	ns
Time to Low	to			ł				
Level Output	Q						,	
t <sub>PHZ</sub> Output Disable	Enable		5	10			,	ns
Time from High	to				ļ			
Level Output	Q							•
t <sub>PLZ</sub> Output Disable	Enable		15	23			·	ns
Time from Low	to			[				
Level Output	Q			1 1				

## **Function Table**

Select Inputs			Data	Inpute	Enable	Output	
В	A	CO	C1	C2	СЗ	G	Y
х	х	Х	х	Х	х	Н	Hi-Z
L	L	L	Х	X	Х	L	L
L	L	н	X	X	х	L	Н
L	н	X	L	X	Х	L	L
L	н	X	Н	X	X	L	н
н	L	l x	X	L	х	L	L.
н	L	x	X	Н	Х	L	н
н	н	x	X	X	L	L	L
н	н	X	x	х	н	L	н

L = Low Logic Level

H = High Logic Level

X = Either Low or High Logic Level

Hi-Z = High Impedance (Off) State

## **Logic Diagram**

#### 54/74253

